Massachusetts Natural Heritage Program

Natural Heritage & Endangered Species Program
Division of Fisheries & Wildlife
Route 135
Westborough, MA 01581
(508)792-7270, ext. 200

MASSACHUSETTS RARE AND ENDANGERED PLANTS

Small Whorled Pogonia
Isotria medeoloides (Pursh) Raf.

DESCRIPTION The Small Whorled Pogonia is a slender orchid which grows up to 10 inches tall when flowering and up to 14 inches when fruiting. The stem ends in a whorl of 4 to 6 pale-green elliptic leaves that are 1 to 3.5 inches in length.

One or two lime-green flowers (about 3/4 in. long) grow from the center of the whorl on short stalks. The flowers are composed of three petals; the lowest of the three having a greenish lip at its tip. Surrounding the petals are 3 separate, narrow, pale green sepals (outer floral leaves) which grow between 1/2 to 3/4 inches long. Fruiting capsules are erect with the fruit stalk length approximately equal to that of the capsule (.7-1.2 in. long).

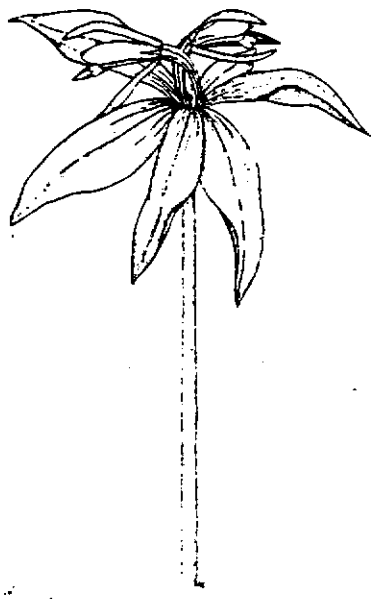


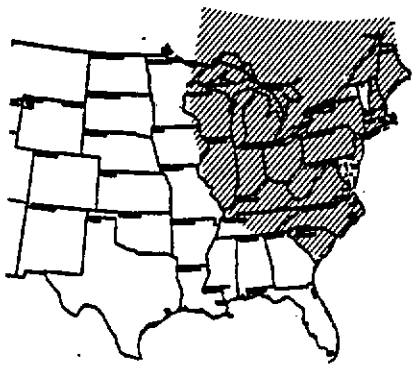
Illustration by Caren Caljouw

LIFE HISTORY/ECOLOGY The Small Whorled Pogonia can remain dormant for 2 years or more making its reproductive history difficult to study and its age difficult to determine. Growth is initiated by mid May and flowering by the second week of June. The flowers last for 7 to 10 days. The leaves turn yellow and die in September and seeds are expelled from their capsules after October 15. The buds which indicate the following year's growth are visible in mid September.

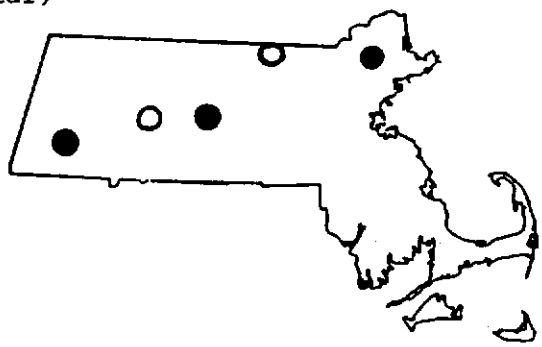
SIMILAR SPECIES Isotria verticillata is similar to Isotria medeoloides but can be distinguished from the latter by the shape of the sepals. Sepals of Isotria verticillata are over 1 1/2 inches long, purplish, and wide-spreading. The sepals of Isotria medeoloides' are much shorter, greenish, and are situated more closely to one another. Another species, Indian Cucumber Root (Medeola virginiana), a plant of the Lily Family, is also similar in appearance to the Small Whorled Pogonia. However, Indian Cucumber Root stems are wirey, and often covered by a white fuzzy material.

RANGE This orchid is found in Maine and Ontario in the north, west to Michigan, Illinois, and Missouri, and south along the Eastern Seaboard to Georgia. It is rare throughout its

(continued overleaf)



Distribution of
Isotria medeoloides



● Verified since 1978
○ Reported prior to 1978

Distribution in Massachusetts by County

range, with the largest concentrations occurring in Maine and New Hampshire.

HABITAT IN NEW ENGLAND Historically, the habitat supporting Isotria medeoloides was not well documented. In recent years however, this species' habitat has been consistently reported as forested slopes composed of "Very Stony Fine Sandy Loam" soil types where water movement is restricted by a fragipan. Fragipans are brittle loamy cement-like layers below the surface of the soil which are low in porosity and force the water to drain laterally instead of vertically. The soil above the fragipan is very acidic and very low in nutrients.

In Massachusetts, this plant is found on slightly sloping previously logged forest land made up of extremely acidic and granitic soils. Like other sites known to support this orchid, the Massachusetts sites are composed of seasonally moist areas above a fragipan. Light conditions are usually filtered rather than shaded or open.

A significant number of plants are associated with this type of habitat and are considered indicator species for the rare orchid when they are found together in plentiful numbers. Associated forest species include: Red Maple (Acer rubrum), Hemlock, (Tsuga canadensis), Canoe Birch (Betula papyrifera), Red Oak (Quercus rubra), White Pine (Pinus strobus), Beech (Fagus grandifolia), Large-toothed Aspen (Populus grandidentata). A natural community including Canoe Birch with dense fern undergrowth is often associated with Isotria medeoloides. Also, Witch-hazel (Hamamelis virginiana) is always abundant where Isotria medeoloides grows.

Associated herb species (when they are present) are woodland ferns such as Dennstaedtia punctilobula, Thelypteris noveboracensis, and Osmunda spp. Evergreen herbaceous species found are: Wintergreen (Gaultheria procumbens), Mayflower (Epigaea repens), Spotted Wintergreen (Chimaphila maculata), Partridge Berry (Mitchella repens), and Shinleaf species (Pyrola spp.). Other species of orchids which are often found with Small Whorled Pogonia are: Pink Lady-slipper, (Cypripedium acaule), Rattlesnake Plantain (Goodyera pubescens), Coralroot species (Corallorhiza maculata and C. odontorhiza), and Three Birds Orchid (Triphora trianthophora).

POPULATION STATUS The Small Whorled Pogonia is listed as Endangered by the U. S. Fish and Wildlife Service and by the Massachusetts Division of Fisheries and Wildlife. This species is one of the rarest orchid species in northeastern North America. As of 1987, there were only 75 extant populations of Isotria medeoloides worldwide composed of less than 5,000 individuals. Historically, this species is known in 18 states and Ontario; today it is known in only 15 states. Vermont, Maryland, and Missouri are those states which formerly supported this orchid. Currently, there are only 3 populations known in Massachusetts. Historically, this plant was known from only two other sites in the state.

The lack of suitable habitat is the most significant factor contributing to this orchid's rarity. Specifically, habitat destruction and alteration combined with vandalism and illegal plant collection threaten Isotria medeoloides. As this species is so rare, it is much sought after by collectors who have illegally uprooted and destroyed individual plants for specimen collection. There is no evidence that this species can be successfully transplanted, so any plants that are uprooted are lost forever.

This orchid requires very specific habitat to succeed and will not occur in other areas. Although the plant is found along vernal streams and in thick, highly acidic, organic duff, the surrounding land is equally important to the success of this orchid. This species relies on water moving from upslope regions down to its populations. When these vital buffer zones are altered, water movement is disrupted and the microclimate of the area often changes, creating a different habitat in which Isotria medeoloides cannot grow. It is believed that it is as important to preserve these peripheral areas as it is to preserve the habitat on which the plants occur.